Fighting five categories of enlargement...from big gums to big smile - A case series

Rathi P[1], Sood R[2], Dodwad V[3], Vaish S[4]

[1,2]PG Student, [3]Professor and Head, [4]Associate Professor, Dept. of Periodontology, I.T.S Centre of Dental studies and Research, Muradnagar, Ghaziabad, India.

ABSTRACT

Introduction: Enlarged Gingiva is one of the prime concerns for both dentists and patients causing esthetic and functional problems. The treatment is based on the understanding of cause and underlying pathologic changes, be it inflammatory, pharmacologically induced, associated with systemic diseases, neoplastic, iatrogenic or idiopathic.

Objective: To provide minimally invasive periodontal therapy to patients presenting with gingival overgrowth of five different etiological backgrounds.

Materials and Methods: Patients with gingival overgrowths reported to the Department of Periodontology and Oral Implantology, ITS-CDSR, Muradnagar, Ghaziabad. Based on the individual history, the patients were categorized under five sections. First was inflammatory due to local deposits, Second was drug induced (phenytoin and amlodipine), Third was iatrogenic in patient undergoing orthodontic treatment, Fourth idiopathic and Fifth Miscellaneous in which patient himself wanted gingival correction because of esthetic concerns. Different treatment strategies were advocated depending upon the history, clinical examination and medical consent.

Results: All patients were successfully treated with full mouth scaling, root planing and surgical therapy. Full mouth gingivectomy and gingivoplasty was conducted one week apart, one quadrant each week with scalpel, electro cautery and LASER depending upon the patient's requirement.

Conclusion: This case series emphasizes on the different types of gingival enlargement based on the etiology and highlights different treatment modalities advocated to manage such cases.

Received: 18-02-2015
Accepted: 28-03-2015

Keywords: Gingival enlargement, Drug induced gingival overgrowth (DIGO), Gingivectomy, Phenytoin, Amlodipine, idiopathic, iatrogenic.

INTRODUCTION

Gingival enlargement is an abnormal growth of the periodontal tissue. Enlarged gingiva is one of the prime concerns for both dentists and patients causing esthetic and functional problems. Several causes of gingival enlargement are known, and the most recognized is drug-induced gingival enlargement (GE). A vast array of drugs have been in use for the alleviation of human afflictions. Although these prescribed medications benefit the overall health of the patient, they also led to the discovery of maladies that adversely affect the gingival tissues.[1] The pharmacological agents mainly associated with gingival overgrowth are anticonvulsants (phenytoin, sodium valproate, phenobarbital, vigabatrin), immunosuppressant drug (cyclosporine used to reduce organ transplant rejection) and a group of antihypertensive drugs like calcium channel blockers(nifedipine, amlodipine, verapamil, diltiazam). Other drugs like antibiotics (erythromycin) and hormones, have also been associated with this side effect.[2]

Address for Correspondence:
Dr Prekshya Rathi, Post graduate Student, Dept. of Periodontics, I.T.S center of Dental studies and Research Muradnagar, Ghaziabad, India.
Email: drprekshya@gmail.com

Gingival fibromatosis (GF) is a heterogeneous group of disorders characterized by progressive enlargement of the gingiva caused by an increase in submucosal connective tissue elements. The etiology and pathogenesis of gingival hyperplasia are still not well established. However, the most common cause of gingival fibromatosis is genetic inheritance while others may be idiopathic.[3] Gingival hyperplasia may also result as an inflammatory response to dental plaque. In some rare instances, benign and malignant neoplasms may cause enlargement of the tissues.[4]

The treatment is based on the understanding of cause and underlying pathologic changes, be it inflammatory, pharmacologically induced, associated with systemic diseases, neoplastic, iatrogenic or idiopathic. Thus, the aim of this case series is to provide minimally invasive periodontal therapy to patient's presenting with gingival overgrowth of five different etiological backgrounds.

CASE 1

A 20 year old male patient reported to the Department of Periodontology, I.T.S-CDSR, Muradnagar, with a chief complaint of swollen and bleeding gums since 6-7 months. Medical history was non-contributory. On clinical examination the gingiva appeared to be soft and oedematous with rolled out margins covering cervical third of the crown with subgingival

calculus deposits and gingiva had tendency to bleed on slight provocation. Diagnosis of chronic inflammatory enlargement was made. Patient was subjected to Phase 1 Therapy including thorough scaling and root planning and oral hygiene instructions were re-inforced. After four weeks the gingival inflammation subsided and it became firm with residual enlargement in the cervical one-third of crown of mandibular anteriors (Fig.1a). Thus external bevel gingivectomy was planned. Briefly, after marking the bleeding points external bevel incision was given with the help of scalpel and gingivectomy knives and the gingival margins were contoured (Fig. 1b). Healing was uneventful and healthy contour of gingiva was regained after four weeks (Fig. 1c)

Fig.1a: Inflammatory enlargement after four weeks of phase 1 Therapy. **Fig.1b**: Conventional external bevel gingivectomy, **Fig. 1c:** Healing after 4 weeks

CASE 2

A 26 year old female patient reported to the Department of Periodontology, I.T.S-CDSR, Muradnagar, with chief complaint of swelling in the upper and lower gums since 1 year. Patient gave a history of epilepsy from past 5 years and was under medication ever since. Currently, the patient was on Phenytoin (100mg) twice a day. On examination, generalized diffuse enlargement was seen in both the arches, covering more than two-third of the clinical crown both buccally and palatally/lingually. The gingival surface appeared to be granular/pebbly and fibrotic with loss of stippling (Fig. 2a). On palpation, tenderness was present over the maxillary and mandibular labial gingiva. On probing, there were pseudo pockets involving all the teeth. A provisional diagnosis of drug induced (phenytoin) gingival enlargement was given. Phase 1 therapy was advocated. Patient was referred to the Physician for possible substitution of Phenytoin. Its dosage was reduced from 200mg per day to 100mg with addition of 50mg Lamotrigine. Patient was put on thorough maintenance phase and curettage for next 6 months during which there was a significant reduction in the gingival enlargement (Fig. 2a). Minimal gingivoplasty was done using electrocautery in papillary region after six months (Fig. 2c)

Fig. 2 (a) Phenytoin induced gingival enlargement (PIGO), **(b)** After 4 weeks of dose alteration, **(c)** Remission of enlargement after 6 months.

CASE 3

A 38 year old female patient reported to the Department of Periodontolgy, I.T.S-CDSR, Muradnagar, with generalised swelling of upper and lower gums on since 2-3 months with tendency to spontaneous bleeding. History revealed that patient was a known hypertensive from past 3 years and was under medication for the same (amlodipine 5 mg tablet once daily). On examination, generalized enlargement of the interdental and the marginal gingiva was present, more pronounced in the lower arch having a pebbled appearance. The normal gingival architecture was lost although stippling was present in the lower anterior region (Fig. 3a). On palpation, the gingiva was tender, firm and fibrotic in consistency. A provisional diagnosis of drug induced (amlodipine) gingival enlargement was given. Phase 1 therapy was advocated. After four weeks quadrant wise gingivectomy was done with Diode LASER at 2.0 W to minimize bleeding due to hypertension.

Oral hygiene instructions were re-inforced. The normal gingival contour was achieved (Fig. 3b) and the results were maintained after 6 months follow up.

Fig. 3: (a) Amlodipine induced gingival enlargement in a hypertensive female patient. (b) Healing after gingivectomy

CASE 4

A 17 year old female was referred from Department of orthodontics to department of periodontology I.T.S-CDSR, Muradnagar, during her active treatment phase for assessment of gingival condition. Clinical examination revealed generalized enlargement of marginal and papillary gingiva. A provisional diagnosis of iatrogenic (bracket induced) gingival overgrowth was made. Patient was enrolled for Phase I periodontal therapy. Evaluation of phase I therapy was done after four weeks (Fig. 4a). The decision was made to correct residual gingival overgrowths by Electrocautery (Fig. 4b). Orthodontic therapy was resumed after 2 weeks of adequate healing. Patient was given proper home care instructions and is under follow up till completion of the orthodontic treatment.

Fig. 4: (a) Iatrogenic gingival enlargement during active orthodontic treatment. (c) Immediately after gingivoplasty with electrocautry

CASE 5

A 13-year-old female patient reported to the Department of Periodontolgy, I.T.S-CDSR, Muradnagar, with a chief complaint of swollen gums involving all her teeth since last 2-3 years with difficulty in speech, articulation, mastication and poor esthetics. She did not give any significant medical history or history of drugs intake. On examination the gingiva was firm, fibrotic, pink in color and rubbery in consistency completely covering the crown and the occlusal surfaces of posterior teeth (Fig. 5a). A provisional diagnosis of idiopathic enlargement was made based on history. Informed consent was obtained from the parent. After Phase 1 therapy, full mouth gingivectomy and gingivoplasty procedures were conducted using combination of scalpel, Diode LASER and Electrocautery. Surgery was conducted in four appointments one week apart, one quadrant each week. Healing was uneventful and patient could resume normal functions of speech and mastication (Fig. 5b).

Fig. 5: (a) Idiopathic gingival enlargement. (b) Six months after gingivectomy

CASE 6

A 39 year old male patient reported to the Department of Periodontology, I.T.S-CDSR, Muradnagar, with chief complaint of short teeth since eruption. On examination, the gingiva was firm and resilient with normal surface texture, however it covered the cervical third of crown beyond the normal level of marginal contour giving the appearance of altered passive eruption (Fig. 6a). Therefore, an esthetic crown lengthening procedure using the golden ratio and other principles of esthetic surgery was planned with Diode LASER after Phase 1 therapy. Healing was uneventful and an increase in crown length of 2-3 mm was achieved with better esthetic outcome (Fig. 6b).

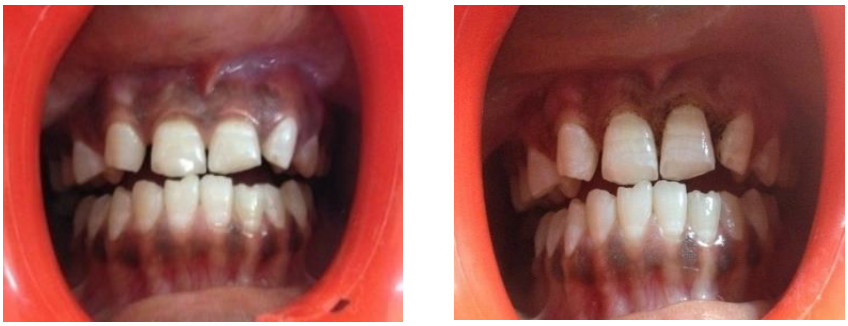

Fig. 6. (a) Altered passive eruption in maxillary anteriors. **(b)** Four weeks after esthetic crown lengthing surgery with Diode LASER.

DISCUSSION

Gingival enlargement can be hereditary or acquired. Improper oral hygiene leads to plaque accumulation and subsequent periodontal problems or caries.[5] Plaque and calculus can lead to chronic inflammatory enlargement originating as a slight ballooning of the interdental papilla and/or the marginal gingiva.

Gingival hyperplasia can occur after therapy with drugs like phenytoin,[6] cyclosporine and nifedipine. The mechanism behind drug-induced gingival hyperplasia involves inflammatory and non-inflammatory pathways.[7] Kimball in 1939 reported the first case of phenytoin induced gingival enlargement.[8] Phenytoin induced gingival hyperplasia has a higher prevalence rate of 50% when compared to cyclosporine and calcium channel blockers.[2] Amlodipine is a third generation dihydropyridine calcium channel blocker used for the management of hypertension and angina.[9] Phenytoin and amlodipine inhibit the intracellular calcium ion uptake which stimulates the gingival fibroblasts, those which have an abnormal susceptibility to the drug.[10] Patients having high plaque score and gingival inflammation have a higher risk of developing drug-induced gingival enlargement than in patients having a good oral hygiene.[11] Inflammatory changes that occur within the gingival tissues appear to orchestrate the interaction between the "modified fibroblast" and the drug. These drugs may also influence the inflammatory response resulting in enlargement. This information can be valuable for the clinician as it will have implication to treat the patient effectively. The most effective treatment for drug-related gingival enlargement is withdrawal or substitution of the medication. This possibility should be examined with the patient's physician. Orthodontists are frequently challenged by soft tissue problems associated with treatment. Most frequent challenges include gingival overgrowths and gingival asymmetry that can turn even good treated case into one that falls short aesthetically. Conventional surgical recontouring of the gingival may have patient related problems like bleeding, post operatve pain and swelling and poor patient acceptance. Soft tissue lasers and electrocautery provide a painless and bloodless surgical option which are more readily accepted by the patients.[11]

Idiopathic gingival fibromatosis may be congenital or genetically acquired. However, many cases may be sporadic with no familial

background. The most common mode of transmission is mainly autosomal dominant. The polymorphic marker for HGF phenotype has been identified on chromosome 2p21.[12,13] Recurrence usually occurs within a few months after surgery and patient may need to undergo repeated gingivectomy procedures. Recurrence rate with LASERS have shown to be minimal as compared to conventional procedures.

Apart from esthetic and functional interference gingival overgrowth can also result in delayed eruption and displacement of teeth and arch deformities. Therefore a thorough understanding of the various etiological factors is essential for the proper diagnosis and treatment planning of such patients.

CONCLUSION

Gingival overgrowth is relatively common disfiguring problem of the gingiva encountered by the Periodontists, inflammatory enlargement being the most common reason followed by intake of various drugs. Thus, thorough scaling and root planning and plaque control form the mainstay of the treatment. This has to be followed by surgical interventions to correct the gingival contour and improve the esthetics. Newer techniques like LASER and electrocautery offer greater advantage over conventional procedures by reducing bleeding and minimal post-operative discomfort.

Dentists and physicians should first consider the non-surgical approach, including the removal of local factors and discontinuation of the offending drug. Then periodontal surgery in the form of gingivectomy or periodontal flap procedures can effectively reduce the enlarged gingival tissues. Oral hygiene and the superimposition of plaque accumulation have a crucial effect on the prognosis of gingival enlargement. The maintenance of treated cases should include meticulous home care and professional recalls. Surgical re-treatment of areas showing recurrence may need to be reconsidered periodically. This case series emphasizes on the different types of gingival enlargement based on the etiology and highlights different treatment modalities advocated in the management of such cases.

REFERENCES:

1. Gosavi D, Nanotkar S, Suman A. Drug induced gingival enlargement. Int J Pharmaceutical Applications 2013;4(2):43-8.
2. Seymour RA, Ellis JS, Thomason JM. Risk factors for drug induced gingival overgrowth. J Clin Periodontol 2000; 27(4):217-23.
3. Pappachan B, Narayan JV, Nayak A. Idiopathic gingival fibromatosis: A neglected case. Indian J Radiol Imaging 2002;12(6):335-8.
4. Shetty AK, Shah HJ, Patil MA, Jhota KN. Idiopathic gingival enlargement and its management. J Ind Soc Periodontol 2010;14(4):263-6.
5. Loe H, Theilade E, Jensen SB. Experimental gingivitis in man. J Periodontol 1965;36(3):177-87.
6. Angelopoulos AP, Goaz PW. Incidence of diphenylhydantoin gingival hyperplasia. Oral Surg Oral Med Oral Pathol 1972;34(6):898-906.
7. Marshall RI, Bartold PM. A clinical review of drug-induced gingival overgrowths. Aust Dent J 1999;44(4):219-32.
8. Joshi S, Bansal S. A rare case report of amlodipine-induced gingival enlargement and review of its pathogenesis. Case Rep Dent 2013;2013(10) 138248.
9. Seymour RA. Calcium channel blockers and gingival overgrowth. Br Dent J 1991;170(10):376-9.
10. Seymour RA, Jacobs DJ. Cyclosporin and the gingival tissues.J Clin Periodontol 1992;19(1):1-11.
11. Shankar BS, Ramadevi T, Neetha M S, Reddy P S K, Saritha G, Reddy J M. Chronic Inflammatory Gingival Overgrowths: Laser gingivectomy and gingivoplasty. J Int Oral Health 2013;5(1):83-7.
12. Cortelli JR. Evidence of genetic heterogenecity for hereditary gingival fibromatosis. J Dent Res 2000;79(10):1758-64.
13. Hart TC, Pallos D, Bowden DW, Bolyard J, Pettenati MJ, Cortelli JR. Linkage of hereditary gingival fibromatosis to chromosome 2~21. Am J Hum Genet 1998;62(4):876-83.

How to cite this Article: Rathi P, Sood R, Dodwad V, Vaish S. Fighting five categories of enlargement…from big gums to big smile - a case series. J Dent Specialities, 2015;3(1):112-116

Source of Support: NIL
Conflict of Interest: None Declared